REMARKS

Applicants would like to first thank the Examiner for her time during the telephonic interview with Applicants' attorney on December 9, 2003. Applicants' attorney asked the Examiner to clarify her statement with respect to direct food contact in 5(B) of the outstanding Office Action. The patentability of claims containing a direct food contact limitation were discussed but no agreement was reached. The Examiner stated she would consider the amended claims when submitted. Applicants' attorney and the Examiner also discussed the objection in 5(C) of the outstanding Office Action and the nature of probative evidence needed to indicate the compositions of Speerare "incapable of producing films with the recited haze values." The Examiner suggested that Applicants conduct a representative sampling from the Examples in the Speer patents.

Claims 1, 3-15 and 17-40 are currently pending in this application. Claim 1 was amended to include the term "polyester." Claims 21 – 40 are newly added. Claims 11-12, 13/11 and 17-20 have been allowed. Claims 5-10 are objected to as being dependent on a rejected base claims but would be allowable if rewritten in independent format. Applicants thank the Examiner for consideration and allowance of the above-mentioned claims. Reconsideration of the Examiner's rejection of Claims 1-4, 13/1 and 14-15 in view of Applicants' amendments and arguments and consideration of new Claims 21-40 is respectfully requested.

Response to Claim Rejections under 35 U.S.C. § 103

The Examiner has the burden of establishing a prima facie case of obviousness. In order to establish obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one skilled in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference must teach or suggest all of the claim limitations. (see, MPEP 706.02(j)).

Speer et al.

Claims 1-4, 13/1, 14-15 were rejected under 35 U.S.C. 103(a) as being unpatentable over Speer et al. (U.S. 5,350,622 or 5,700,554). The Examiner states that `622 and `554 each disclose an oxygen scavenging composition for forming single layer packaging materials for oxygen sensitive materials, wherein the composition comprises PET, polybutadiene, and a transition

metal catalyst. The Examiner finds that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the compositions disclosed in Speer et al. in a single layer packaging material to simplify manufacture and recycling. The Examiner also finds that one of ordinary skill in the art would have selected the type and relative amounts of the bulk polymeric component, oxygen scavenging polymer and additives to obtain the specific transparency of Claim 1. Applicants respectfully disagree.

The Speer patents do not teach or suggest to one skilled in the art how to make a monolayer polyester package for oxygen sensitive products comprised of an oxygen scavenging composition wherein the haze value is less than about 8%. Since much of the specification in the Speer `554 and `622 patents are the same Applicants will refer to the `554 patent only.

The Speer patents are directed to blends of ethylenically unsaturated hydrocarbons with a transition metal catalyst, and optionally a polymeric diluent. The disclosure in Speer is directed primarily to polyolefin flexible films. Those films are made by blending a) diluent polymers, such as ethylene vinyl acetate (EVA) and low density polyethylene; with b) ethylenically unsaturated hydrocarbons, such as castor oil and 1,2 polybutadiene; and; c) a transition metal catalyst. (See Examples 1-33). Speer also states that for most applications where transparency is necessary, a layer which allows at least 50% transmission of visible light is acceptable. (Col 4 lines 30-33). Achieving a haze value of less than 8 %, as in Claim 1 of the present invention, compared to an acceptable haze value of 50%, as disclosed in Speer, is not an obvious modification particularly when manufacturing monolayer polyester packaging comprising an oxygen scavenging composition.

Claim1 is currently amended so that it is directed to polyester packaging. The Speer `554 and `622 patents are primarily directed to polyolefin films and briefly disclose use of PET as a possible diluent polymer for rigid packaging. (See col. 5, lines 23-24). Speer teaches that when selecting a diluent polymer, compatibility with the ethylenically unsaturated hydrocarbon selected for (a) should be considered as the clarity, mechanical properties and texture of the article can be adversely affected by a blend containing a polymer which is incompatible with (a). (See col. 5 lines 29-36). Speer also teaches that when making transparent oxygen-scavenging layers, 1,2-polybutadiene is preferred as the oxygen scavenging component (a) because of its characteristics that are similar to polyethylene. (See col. 4 lines 34-38). Speer does not teach

one skilled in the art which oxygen scavenging component (a) to use when making transparent oxygen scavenging layers with PET as the diluent polymer. In other words,Speer does not teach one skilled in art how to make a monolayer polyester package for oxygen sensitive products comprised of an oxygen scavenging composition wherein the haze value is less than about 8% as in Claim 1 or in any claims dependent therefrom. Nor does Speer render such claims obvious.

To demonstrate this, Applicants took the teachings in the Speer patents and ran Examples 26-27 and 29-30 and then applied the same teachings to polyester films (See Kulzick Declaration). As demonstrated below and in the Kulzick Declaration, Speer does not teach or suggest to one skilled in the art how to achieve a polyester oxygen scavenging package with a haze value less than 8%.

As stated above, Speer recommends using 1,2 polybutadiene as component (a) when clarity is an issue. An Example in Speer that uses 1,2 polybutadiene as component (a) is Example 26. Example 26 does not use a diluent polymer and is a blend of component (a) with a transition metal catalyst. Applicants repeated Example 26 of the `554 patent which is identical to Example 26 of the `622 patent. Films were prepared via melt blending and pressed as described in the `554 patent. 40g of 1,2 polybutadiene obtained from Scientific Polymer Products was mixed with 0.152g of 12% by weight cobalt, in the form of cobalt-bis-ethylhexanoate solution in mineral spirits (Nuxtra Nuodex) obtained from Condea Servo to produce a loading level of approximately 500 ppm of cobalt based on the weight of the polymer. A 10 mil thick film was pressed at 130°C using a lab press. The films were quenched by immersion in ice water to prevent crystallization and make as clear a film as possible. The haze values were measured on a Hunter Lab Ultra Scan Sphere as taught in the present patent application on page 30 of the specification. The haze value for this composition containing 1,2 polybutadiene alone was 2.54 (See Kulzick Declaration para. 8).

Applicants also repeated Example 27 of the `554 patent which utilizes a diluent polymer, and blends low density polyethylene (LDPE) as the diluent polymer with 1,4 polybutadiene. 30 g of low density polyethylene from BP Chemicals (Novex 19N430 (MFR = 7.5g/10min)), 10 g of cis-/trans-1,4 polybutadiene from Scientific Polymer Products and 0.147g Nuxtra Neodex solution were combined in a Haake mixing bowl for 15 mins at 130°C. This produced a 3:1 blend of polyethylene and polybutadiene containing approximately 500 ppm of cobalt. A film

weighing 3.6 g and 10 mils thick was pressed and the haze value measured on a Hunter Lab Ultra Scan Sphere. The haze value was 34.31. (See Kulzick Declaration para 9). This Example produced a film with a haze value greater than 8%.

Applicants repeated Example 27 in accordance with the procedure set for in paragraph 9 of the Kulzick Declaration using 1,2 polybutadiene as the oxygen scavenging component instead of cis-/trans-1,4 polybutadiene. 1,2 polybutadiene was used because the Speer patents recommends use of 1, 2 polybutadiene for clarity purposes if polyethylene is used as the diluent polymer. (Speer `554 col. 4 lines 34-36). 0.172g of cobalt solution was used. The haze of the film resulting from this modified Example 27 was 6.91. (See Kulzick Declaration para 10). Thus, following the preferred teachings of Speer, Applicants produced a polyolefin film with a haze value less than 8%.

Applicants next repeated Example 29 of the `554 and `622 patents by combining 3.52g EVA-28, with 0.928g of Castung 103 GH castor oil obtained from Caschem, 17.3 mg of Nuxtra Manganese, and 37 milliliters of tetrahydrofuran, obtained from Fischer Scientific product number T425-4 in a 250 ml flat-bottom boiling flask. The flask was heated to reflux until the ingredients dissolved completely and then cooled to room temperature. Solvent was removed by evaporating the tetrahydrofuran with a nitrogen purge over eighteen hours. The film was weighed to establish that the solvent had been removed. The dry film was peeled from the flask and the optical properties of the film were determined as described above by measurement of the flat center of the sample and the haze value was 50.17. (See Kulzick Declaration para. 11).

Applicants next repeated Example 30 using 3.61 g EVA-40, a ethylene-vinyl acetate copolymer with a 40% vinyl acetate content obtained from Scientific Polymer Products, 0.182 g Castung 103 GH castor oil, 14.5 mg of Nuxtra Manganese, and 44 ml of dichloromethane solvent. This yielded a clear film with a haze value of 22.54. (See Kulzick Declaration para. 12). Thus, using the Speer teachings, Applicants could not produce an EVA-based film with a haze value less than 8%.

Applicants next applied the teachings of the Speer patents to polyester packaging. Applicants blended PET with 1,2 polybutadiene and 1,4 polybutadiene in accordance with the teachings in Example 27 following the procedure set forth in paragraph 9 of the Kulzick Declaration except the temperature was raised to 260-265°C due to the higher melting point of

polyester versus polyethylene. Films were prepared as described above but were pressed at 290°C due to the higher polyester melting point. The resulting haze values for these films was 60.49 and 67.35 respectively. (See Kulzick Declaration para. 13).

The castor oil/PET blends were prepared by melt processing since PET is not soluble in the solvents described in Examples 29 and 30. Films were prepared as described above and were pressed at 260°C. It should be noted that the blends of PET and castor oil were exuding castor oil when the films were under pressure in the film forming process. This illustrates the high incompatibility of PET and castor oil. The PET/castor oil film made in accordance with Example 29 was extremely brittle and did not form a cohesive film. The resulting haze values for these films were 69.69 and 68.62 respectively. (See Kulzick Declaration para 13). Thus, following the teaching of Speer, Applicants were unable to produce a polyester film with a haze value less than 8%. It follows that Speer does not teach nor suggest how to modify its teaching so that one skilled in the art could make a polyester package for oxygen sensitive products with a haze value less than 8%.

It is unexpected and a surprising result that Applicants are able to make a monolayer polyester package for oxygen sensitive products comprised of an oxygen scavenging composition wherein the haze value is less than about 8% because of the compatability issue between polyester and known oxygen scavenging compositions. Prior to Applicants' invention, known oxygen scavenging systems were incompatible with PET and resulted in hazy monolayer packaging materials. (See Kulzick Declaration para. 15).

It follows that the Examiner has not met the basic criteria to establish obviousness. There is no suggestion or motivation, either in Speer, or in the knowledge generally available to one skilled in the art, to modify the teachings of Speer to achieve a polyester package for oxygen sensitive products with a haze value of less than 8%. If one skilled in the art followed the teachings in Speer for monolayer polyester packaging, he would obtain a film with a haze value greater than 60%. Thus, Claims 1-4, 13/1 and 14-15 of the present application are not obvious in view of Speer.

New Claims 21-40

New Claims 21-40 are also clearly patentable over Speer because the monolayer package of Claims 21 – 40 is appropriate for direct contact with a food or beverage, while the Speer

compositions are not. Evidence that the Speer compositions are not appropriate for direct contact with a food or beverage can be found in Speer's own patents.

A teaching by one skilled in the art that the blends disclosed in Speer, as well as other oxygen scavenging compositions, are not appropriate for direct food contact can be found in the Speer `554 patent as well as in a later patent also assigned W.R. Grace. U.S. Patent No. 5,834,079 (hereinafter the `079 patent) is also directed to packaging for oxygen sensitive products such as food and includes Drew Speer as an inventor.

Applicants direct the Examiner's attention to Col. 7 lines 3-5 of the `554 patent which discusses the benefit of using layers in addition to the oxygen scavenging layer in packaging applications.

> Furthermore, layer (iii) can provide a barrier to migration of (a), (b), other additives or by-products of scavenging into the package interior.

Thus, the Speer patent acknowledges that migration of cobalt, the ethylenically unsaturated hydrocarbon and the by-products of oxygen scavenging can migrate into the package interior. This can affect the organoleptic properties of the packaged product if it is a food or beverage.

Applicants next direct the Examiner's attention to Col. 4 of the `079 patent which reads as follows:

> The ethylenically unsaturated hydrocarbon and transition metal catalyst can be further combined with one or more polymeric diluents, such as thermoplastic polymers which are typically used to form film layers in plastic packaging articles. (lines 12-15) . . .
>
> The mixing of the components listed above is preferably accomplished by melt-blending at temperatures in the range of 50 °C to 300 °C. (lines 37-40). . ..
>
> Although these technologies offers [sic] great potential in packaging applications, it has been found that oxygen scavenging structures can sometimes generate reaction by-products which can affect the taste and smell of the packaged material (i.e.

organoleptic properties), or raise food regulatory issues. These by-products can include acids, aldehydes and ketones.

The inventors have found that this problem can be minimized by the use of zeolites (such as organophilic zeolites) which absorb odor-causing reaction by-products. (lines 46-55).

The quoted language shows that the blends of ethylenically unsaturated hydrocarbons, transition metal catalysts and optional diluent polymers disclosed in Speer, as well as other oxygen scavenging systems set forth in Column 3 of the `079 patent, generate reaction by-products that raise organoleptic and food regulatory issues. The solution to this problem disclosed in the `079 patent was the use of "Zeolites [to] reduce the concentration of certain extractables which could cause regulatory issues." (`079 patent Col. 9 lines 65-68). Thus, it would not have been obvious to one of ordinary skill in the art at the time the invention was made to use the compositions disclosed in Speer in a single layer package for food or beverages because that package would not be appropriate for direct food contact because the oxygen scavenging structures can generate reaction by-products and cause regulatory issues.

In fact, the `079 patent, on which Speer is an inventor, teaches away from the present invention by teaching the use of zeolites to reduce the concentration of certain extractables instead of teaching an oxygen scavenging composition with a migration level of components low enough to render it appropriate for direct food contact.

It follows that the Examiner has not met the basic criteria to establish obviousness. There is no suggestion or motivation, either in the Speer `554 and `622 patents, or in the knowledge generally available to one skilled in the art, to modify the teachings of the Speer patents to render the oxygen scavenging compositions disclosed therein appropriate for monolayer applications in direct contact with food or beverage products. If one skilled in the art modified the `554 or `622 patents it would be to use zeolites to reduce the concentration of extractable components of the oxygen scavenging composition which Applicants do not use or require. Thus, new Claims 21-40 of the present application are patentable over the `554 and `622 patents to Speer et al.

If the Examiner believes an oral or telephonic interview would advance the prosecution of this case, the Examiner is encouraged to contact Applicants' attorney at the Examiner's convenience.

Respectfully submitted,

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